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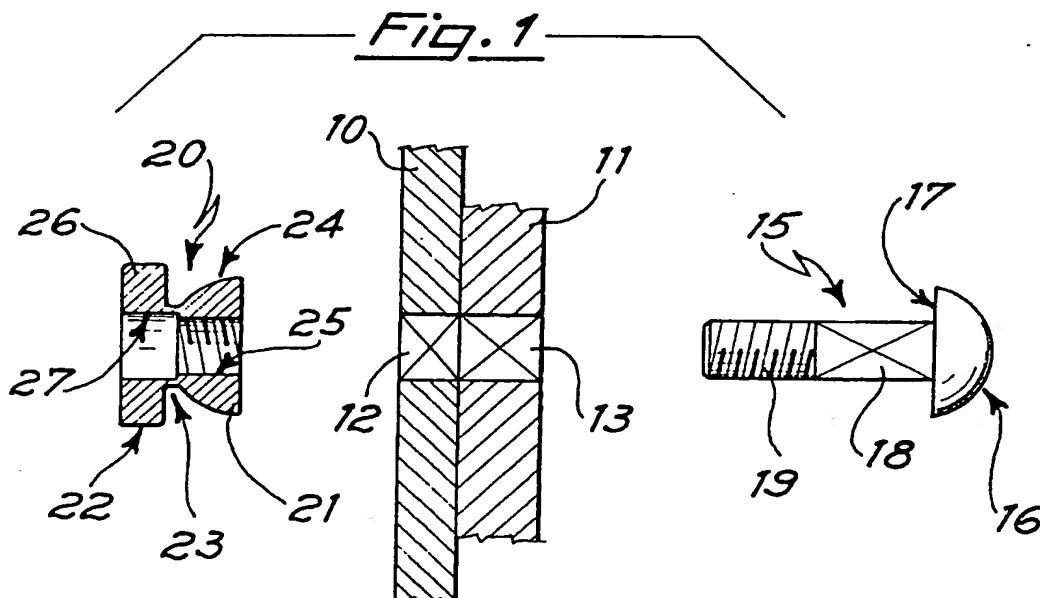
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F2H 11A6C 13 17B 20
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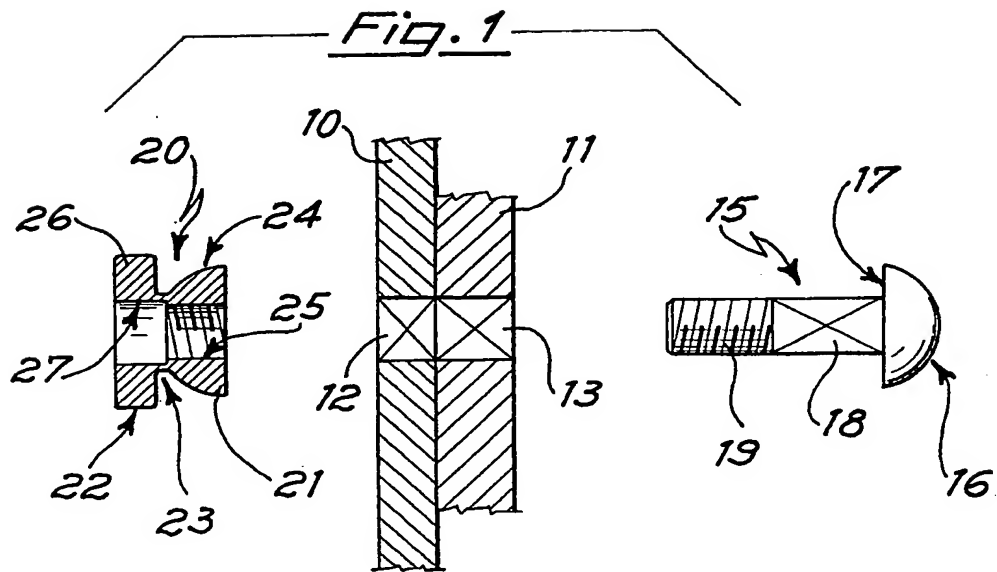
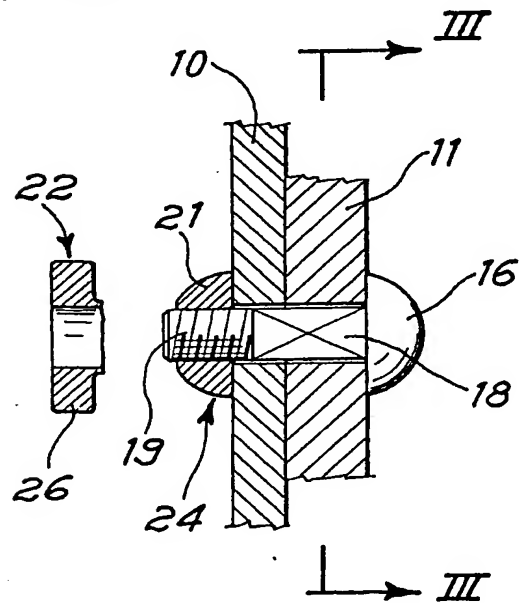
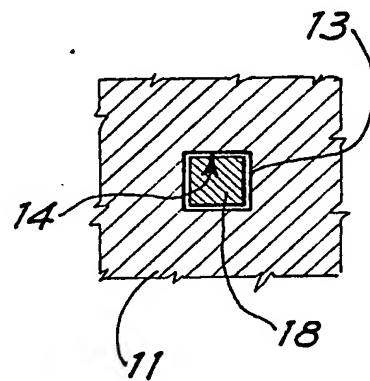
GB A 2058989	GB 1204294	GB 0867012
GB 1449114	GB 1144080	GB 0594665
GB 1252834	GB 1028864	

(58) Field of search
F2H

(57) A safety lock device for locking together elements 10, 11 of a fence, grating or the like, has a locking bolt (15), which is secured against rotation by engagement between a polygonal shaped shank portion (18) and a correspondingly shaped opening (13) in at least one of the elements (10, 11). A threaded portion (19) of the bolt shank is engaged by a nut (20) with a first inwardly threaded portion (24) having a rounded outer surface, and a second bored portion (22) with rotating means engageable by a tool. The nut portions (22, 24) are interconnected by a breakable section which breaks under a predetermined tightening torque exerted on the nut portion (22) to detach the latter from the nut portion (24).



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Fig. 2Fig. 3

SPECIFICATION

A safety lock device

5 This invention relates to a safety lock device for locking together elements of a fence, grating or like barrier structure, in irremovable manner.

10 With fences, although the invention is not limited to this use alone, modular elements fixed to each other or to vertical rods, frequently are employed. The fence elements conventionally are fastened together with by normal bolts or by welding the fencing elements together or to the vertical rods.

15 Fastening together by conventional bolts is easily and quickly performed, but the fence, or at least an element of the fence, can be easily taken down by ill-intentioned persons who wish to enter the enclosed place. Welding eliminates this inconvenience, but necessarily involves a much longer and much more difficult fastening operation.

20 Moreover, welding involves the need subsequently to paint the fence, while the present tendency is to use already painted or even plastics or plastics coated fences. A safety lock device using a nonremovable bolt is shown in US 1677269 to Burghart, in which 30 both the bolt head and the nut head have a rounded portion, as well as a detachable element with polygonal outer surface, for locking the nut. This known device can be unscrewed by simply cutting a groove (with a file, for 35 instance) at the bolt shank free end and then operating thereon by a usual screwdriver. The nut is held in place, during such unscrewing operation, by friction against its seat. Accordingly, no actual safety is provided.

40 The same may happen with a safety bolt according to German Patent Application (DOS) 2011739 to Kramer, wherein a nut is provided with a rounded head having a blind threaded bore and a detachable nut element 45 for locking the nut. This nut can be unscrewed by the same means as above outlined.

50 There is thus a need for a generally improved safety lock device which permits fastening in a simple and quick way by tightening a nut to a screw, but which makes it very difficult for ill-intentioned persons to detach the fastened elements.

55 According to the present invention there is provided a safety lock device for locking together elements of a fence, grating or the like, including at least two elements to be locked together, each of which elements has an opening therethrough for axial alignment with the 60 opening in the other element(s), and with at least one of the openings having a polygonal shape in cross-section, a locking bolt having a head shaped to act against a wall of one of the elements and a shank insertable in said 65 openings when aligned, which shank com-

prises a first shank portion having a zone with a polygonal shape in cross-section, for non-rotatably mating with said at least one opening and a threaded second shank portion at the shank end opposite to the head, a locking nut formed by two axially aligned portions namely, a first nut portion with a rounded external surface and an internally threaded through bore for engaging the second shank thread, and a second nut portion for engagement by a torque exerting tightening tool, having an inner bore with an inner diameter greater than the outer diameter of the threaded second shank portion, there being 70 connection means between the first and second nut portions, breakable at a predetermined tightening torque rotatably applied to the second nut portion.

75 For a better understanding of the present invention, and to show how the same may be carried into effect, reference will now be made, by way of example to the accompanying drawings, in which:—

80 *Figure 1* is a partially sectioned view of a safety lock device according to the invention in a disassembled condition,

85 *Figure 2* is a view similar to that of Fig. 1, showing the device in an assembled condition, and

90 *Figure 3* is a cross-sectional view taken on the line III-III of Fig. 2.

95 As shown in the drawings, a safety lock or fastening device of the invention locks together two or more elements 10, 11 such as fence components. The elements 10, 11 have openings 12, 13 respectively therein for axial alignment. At least one of the openings 13 or 12 has a polygonal, e.g. square, cross section, as depicted by 14 in Fig. 3.

100 To lock the elements 10, 11 together, a locking bolt 15 is used. The bolt 15 has a head 16, preferably with a rounded or spherical cap or dome shaped outer surface 17 to avoid engagement by a tool for crushing the shank.

105 The bolt head 16 has a flat surface 17 greater in size than the openings 12, 13 for acting and resting against an outer wall of one of the elements 10, 11 when the bolt is engaged in the openings 12, 13.

110 The bolt shank has a first shank portion 18 which is polygonal shaped, e.g. square-shaped, in section in accordance with the shape of the openings 12 and/or 13 (see Fig. 3), and a second outer shank portion 19 which is suitably threaded. The bolt is inserted with its shank within the openings 12, 13 so that the polygonal shank portion 18 will mate with the polygonal opening 13

115 locking and preventing any rotational movement of the bolt relative to the elements 10, 11. Of course, the axial length of the shank portion 18 must be less than the total thickness of the abutting elements 10, 11 at their 120 openings 12, 13, while the axial length of the

whol shank must be gr ater than said thick-
ness.

To fasten the bolt in place, a locking nut 20 is provided. This nut 20 is formed by a first
5 nut portion 21 and a second nut portion 22
connected together by a weakened or break-
able zone 23 which breaks when a predeter-
mined torque is exerted between the nut
portions 21 and 22. The first nut portion 21
10 has an externally rounded or spherical-cap
shaped surface 24, to avoid the use thereof of
any unscrewing tool, and an internally
threaded inner through bore 25 with a thread
corresponding to that of the bolt shank por-
15 tion 19.

The second nut portion 22 has an outer
surface 26 so shaped, e.g. polygonally
shaped, to allow the use of a tightening tool
thereon, and an inner bore 27 aligned with
20 the bore 25 and having a diameter greater
than that of the bore 25.

Fastening is carried out, with the bolt en-
gaged in the openings 12, 13 by tightening
the nut 20 on the bolt 15 by means of a
25 suitable tool acting on the nut portion 22, and
carrying out the tightening action until the
zone 23 breaks detaching the nut portion 22,
as shown in Fig. 2. The device is then safety
locked and no unscrewing action can be car-
ried out on the remaining nut portion 21,
30 whose outer surface cannot be engaged by a
tool, or on the bolt, which is locked against
rotation of the polygonal shape of the same
and of the opening (s).

CLAIMS

1. A safety lock device for locking to-
gether elements of a fence, grating or the like,
including, at least two elements to be locked
40 together, each of which elements has an
opening therethrough for axial alignment with
the opening in the other element(s), and with
at least one of the openings having a polygo-
nal shape in cross-section, a locking bolt hav-
ing a head shaped to act against a wall of one
45 of the elements and a shank insertable in said
openings when aligned, which shank com-
prises a first shank portion having a zone
polygonal shape in cross-section, for non-rota-
bly mating with said at least one opening
50 and a threaded second shank portion at the
shank end opposite to the head, a locking nut
formed by two axially aligned portions,
namely, a first nut portion with a rounded
55 external surface and an internally threaded
through bore for engaging the second shank
portion thread, and a second nut portion, for
engagement by a torque exerting tightening
tool, having an inner bore with an inner
60 diameter greater than the outer diameter of
the thread d second shank portion, there be-
ing connection means between the first and
second nut p rtions, breakable at a pr deter-
mined tight ning torqu rotatably applied t
65 the second nut portion.

2. A device according to claim 1, wherein
the shank has an axial length greater than the
total thickness of the elements to be locked
together, in the region of their aligned open-
ings, and wherein the first shank portion has
70 an axial length less than said total thickness.

3. A device according to claim 1, wherein
the bolt head and/or the first nut portion
have/has a substantially spherical cap or
75 dome shaped outer surface.

4. A device according to claim 1, wherein
the second nut portion has a polygonally
shaped outer side surface for engagement by
a tightening tool.

80 5. A safety lock device for locking to-
gether two elements of a fence, grating or the
like, substantially as hereinbefore described
with reference to the accompanying drawings.

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